REMARKS/ARGUMENTS

Applicant thanks the Examiner for the thorough examination of the application. Claims 1-24 remain in the present application, of which claims 1, 16-18, 20-21 and 23 are independent. Claims 1-6, 8-9 and 13-24 have been amended herein. None of the claims has been cancelled. Applicant respectfully requests that the rejection of claims 1-24 be withdrawn and that they be allowed in view of the following amendments and arguments.

I. Objection to Claim 1

Claim 1 has been objected to because of alleged informalities. Since the claim 1 has been amended and the objected portion has been corrected, Applicant requests that the objection to claim 1 be withdrawn.

II. Rejection of Claims 20, 23 and 24 under 35 U.S.C. § 112

Claims 20, 23 and 24 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Regarding claim 20, the phrase "the beacon packet may be used" has been deleted. Further claim 23 has been amended to correct an inadvertent clerical error not related to patentability to overcome the Examiner's rejection. Further, claim 24 has been amended in accordance with the assumption made by the Examiner to overcome the rejection. Therefore, Applicant

requests that the rejection of claims 20, 23 and 24 under 35 U.S.C. § 112, second paragraph, be withdrawn.

III. Rejection of Claim 20 under 35 USC § 102(e)

Claim 20 has been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Application Publication No. U.S. 2002/0147800 Al ("Gai et al."). In rejecting claim 20, the Examiner contends that "Gai teaches a method for establishing a self-healing tree network (i.e., reconfigure the network following a change, such as a link failure, page 3 paragraph [0020] and page 4 paragraph [0041]) . . ."

However, to anticipate a claim, the reference must teach every element of the claim. Therefore, all claim elements, and their limitations, must be found in the prior art reference to maintain a rejection based on 35 U.S.C. §102.

Claim 20 now recites, in a relevant portion, "the at least one root node is configured to always operate as a root node and the network nodes are configured to always operate as nodes that are not root nodes." (Emphasis Added).

According to an aspect of the present invention, by preventing network nodes from sending out beacon packets from all nodes (as is done during an election in the Spanning Tree Protocol), the preferred embodiment is able to converge on a loop-free topology much more quickly. Hence, by having a fixed set of root nodes and avoiding the overhead of having all nodes generate beacon or HELLO packets, the network can be more easily scaled to larger networks and faster convergence can be supported.

Gai et al., contrary to claim 20 of the present application, teaches using Spanning Tree Algorithm (see for example, FIG. 2, 236; FIG. 3A, 314; FIG. 3B, 326), according to which any node (or switch) can potentially be a root node (or switch), as those skilled in the art would know. For example, Gai et al. specifically teaches that "[i]n particular, execution of the spanning tree algorithm causes the switches to elect a single switch, among all the switches within each network, to be the "root" switch." (paragraph [0009]) As such, Gai et al. teaches away from "the at least one root node is configured to always operate as a root node and the network nodes are configured to always operate as nodes that are not root nodes," and do not disclose this feature. Therefore, Gai et al. does not disclose at least one limitation of claim 20, and does not anticipate claim 20. Therefore, Applicant requests that the rejection of claim 20 be withdrawn and that it be allowed.

IV. Rejection of Claims 21-22 under 35 U.S.C. § 102(e)

Claims 21-22 are rejected under 35 U.S.C. 102(e) as allegedly being anticipated by U.S. Patent Publication No. 2003/0095504 A1 ("Ogier").

Claim 21 now recites, in a relevant portion, "determining a network isolation based on an age indicator of a beacon packet received from a parent node over a network comprising a plurality of nodes including the network node and the parent node, and at least one root node configured differently from the plurality of nodes, wherein the at least one root node is configured to generate and transmit beacon packets and the

plurality of nodes are configured to never generate beacon packets." (Emphasis Added).

In rejecting claim 21, the Examiner contends "Ogier teaches a method for re-establishing a network connection (i.e., reestablish the broken link 24, page 3 paragraph [0041], Fig. 1), comprising: determining a network isolation (i.e., lost) based on an age indicator (i.e. status(B)) of a beacon packet (i.e., Hello message) received from a parent node . . . "

As such, the Examiner appears to equate the "beacon packet" of claims 21 with the "HELLO message" of Ogier. However, Ogier clearly teaches that "[e]very each node i in the subnet periodically transmits (step 252) a HELLO message at predetermined (e.g., HELLO_INTVL=0.5 seconds) timeout intervals" in paragraph [0195]. Hence, Ogier appears to require that each node generate and transmit a HELLO message at predetermined timeout intervals. Therefore, Ogier does not disclose at least one limitation (i.e., "wherein the at least one root node is configured to generate and transmit beacon packets and the plurality of node are configured to never generate beacon packets") of claim 21, and does not anticipate claim 21. Therefore, Applicant requests that the rejection of claim 21 be withdrawn and that it be allowed.

Since claim 22 depends from claim 21, it incorporates all the terms and limitations of claim 21 in addition to other limitations, which together further patentably distinguish this claim over the cited references. Therefore, Applicant requests that the rejection of claim 22 be withdrawn and that this claim be allowed.

V. Rejection of Claims 1-3, 7-8 and 12-19 under 35 USC § 103(a)

Claims 1-3, 7-8, and 12-19 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2002/0167898 Al ("Thang et al.") in view of U.S. Patent No. 6,993,033 B1 ("Williams").

Rejection of Claims 1-3, 7-8 and 12-15

In rejecting claim 1, the Examiner contends that: Thang et al. teaches a method for detecting a network isolation by a network node (i.e., *detecting faults within a network*, page 5 paragraph [0106]) comprising: receiving a beacon packet (i.e., Hello packet) from a parent node over a network after an aging interval (i.e., HelloInterval) (i.e., a Hello packet is received after it is broadcasted at hello interval, page 10 paragraph [0206]) . . . ."

While the Examiner concedes that "Thang does not explicitly teach storing an aging indicator for the received beacon packet, and the aging indicator is not reset by a second beacon packet received from the parent node," the Examiner further contends that "Williams teaches the network device includes a timer that defines an aging interval associated with the address table (see abstract) . . . It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the aging indicator on the address table of Williams in the process of detecting a network isolation/fault in Thang."

According to MPEP § 2142, however, in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either

in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. <u>Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations</u>. (<u>Emphasis Added</u>).

As discussed above, by preventing network nodes from sending out beacon packets from all nodes (as is done during an election in the Spanning Tree Protocol), the preferred embodiment is able to converge on a loop-free topology much more quickly, and the network can be more easily scaled to larger networks and faster convergence can be supported.

Applicant does not see any disclosure in Thang et al. and Williams of "configuring the group of root nodes to periodically generate beacon packets; <u>configuring the plurality of network nodes never to generate beacon packets</u> . . . if the aging indicator is not reset by a second beacon packet received through the adjacent one of the root or network nodes before a second interval greater than the aging interval, then: <u>indicating a network isolation condition; and listening for a new beacon packet originating from the group of root nodes and received through a different one of the root or network nodes</u>" (<u>Emphasis Added</u>), as recited in claim 1. Therefore, a *prima facie* case of obviousness cannot be established for claim 1 over Williams and Thang et al. Therefore, Applicant requests that the rejection of claim 1 be withdrawn and that it be allowed.

Since claims 2-3, 7-8 and 12-15 depend, directly or indirectly, from claim 1, they each incorporate all the terms

and limitations of claim 1 in addition to other limitations, which together further patentably distinguish these claims over the cited references. Therefore, Applicant requests that the rejection of claims 2-3, 7-8 and 12-15 be withdrawn and that these claims be allowed.

Rejection of Claims 16 and 17

Claims 16 and 17 have been rejected based on the same rationale as that of the rejection of claim 1.

Claim 16 recites, in a relevant portion, "configuring the group of root nodes to periodically generate beacon packets; configuring the plurality of network nodes never to generate beacon packets; . . . if the aging indicator is not reset by a second beacon packet received through the adjacent one of the root or network nodes before a second interval greater than the aging interval, then: indicating a network isolation condition; and listening for a beacon packet originating from the group of root nodes and received through a different one of the root or network nodes."

Claim 17 recites, in a relevant portion, "means for configuring the group of root nodes to periodically generate beacon packets; means for configuring the plurality of network nodes never to generate beacon packets; . . . means for, if the aging indicator is not reset by a second beacon packet received through the adjacent one of the root or network nodes before a second interval greater than the aging interval, then: indicating a network isolation condition; and listening for a

beacon packet originating from the group of root nodes and received through a different one of the root or network nodes.

For reasons that are substantially the same as those given above in reference to claim 1, claims 16 and 17 are patentably distinguishable over Thang et al. and Williams. Therefore, Applicant requests that the rejection of claims 16 and 17 be withdrawn and that they be allowed.

Rejection of Claims 18 and 19

In rejecting claim 18, the Examiner contends that "Thang teaches a method for identifying a network connection failure (i.e., detecting faults with the network, page 5 paragraph [0106]) . . ." Claim 18 recites in a relevant portion, "[a] method for identifying a network connection failure at a network node, the method comprising: receiving a beacon packet from an adjacent node over a network . . . wherein only the at least one root node is configured to generate beacon packets and the plurality of nodes are configured to never generate beacon packets." Since Thang et al. and Williams do not teach or suggest such limitation, claim 18 is patentably distinguishable over Thang et al. and Williams. Therefore, Applicant requests that the rejection of claim 18 be withdrawn and that this claim be allowed.

Since claim 19 depends from claim 18, this incorporates all the terms and limitations of claim 18 in addition to other limitations, which together further patentably distinguish this claim over the cited references. Therefore, Applicant requests

that the rejection of claim 19 be withdrawn and that this claim be allowed.

V.   Rejection of Claims 4-6, 9-11 and 23-24 under 35 U.S.C. § 103(a)

Rejection of Claims 4-6 and 9

Claims 4-6 and 9 have been rejected under 35 U.S.C. § 102(a) as allegedly being unpatentable over Thang et al. in view of Williams, and further in view of U.S. Patent Application Publication No. 2004/0103282 ("Meier et al.").

Here, Meier et al. is being cited for the proposition that it teaches "transmitting a request to the neighboring network node to register the neighboring network node as a new parent node when the network isolation condition is indicated (page 15 paragraph [0356] and page 16 paragraph [0391]). However, Meier et al. does not overcome the deficiency of Thang et al. and Williams to reject claim 1. Therefore, claim 1 is patentably distinguishable over Thang et al., Williams, and Meier et al.

Since claims 4-6 and 9 depend, directly or indirectly from claim 1, they each incorporate all the terms and limitations of claim 1 in addition to other limitations, which together further patentably distinguish them over the cited references. Therefore, Applicant requests that the rejection of claims 4-6 and 9 be withdrawn and that it be allowed.

Rejection of Claims 10 and 11

Claims 10 and 11 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Thang et al. in view of

Williams, and further in view of Ogier. Here, Ogier is being cited for the proposition that it teaches "receiving a network reconfiguration command (i.e., page 5 paragraph [0078]; selecting a new parent node that is not a descendant node within the network in response to the network reconfiguration command (page 5 paragraph [0078]). However, Ogier does not overcome the deficiency of Thang et al. and Williams to reject claim 1. Therefore, claim 1 is patentably distinguishable over Thang et al., Williams, and Ogier.

Since claims 10 and 11 depend, directly or indirectly, from claim 1, they each incorporate all the terms and limitations of claim 1 in addition to other limitations, which together further patentably distinguish these claims over the cited references. Therefore, Applicant requests that the rejection of claims 10 and 11 be withdrawn and that these claims be allowed.

Rejection of Claims 23 and 24

Claim 23 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ogier, in view of Meier et al.

Claim 23 recites, in a relevant portion, "[a] method for accepting a child node, the method comprising: receiving a beacon packet from a neighboring node in a network comprising a plurality of network nodes including the child node and the neighboring node, and at least one root node configured differently from the network nodes, wherein only the at least one root node is configured to generate and transmit beacon packets, and the network nodes are configured to never generate beacon packets . . . " (Emphasis Added).

Similarly as discussed above in reference to claim 21, Ogier does not disclose that "only the at least one root node is configured to generate and transmit beacon packets, and the network nodes are configured to never generate beacon packets." Further, Applicant does not see such disclosure in Meier et al. Therefore, Ogier and Meier et al. together do not teach or suggest at least one limitation of claim 23, and a *prima facie* case of obviousness cannot be established for claim 23 over Ogier and Meier et al. Therefore, Applicant requests that the rejection of claim 23 be withdrawn and that this claim be allowed.

Claim 24 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ogier, in view of Meier et al., and further in view of U.S. Patent Application Publication No. 2003/0051051 Al ("O'Neal et al."). O'Neal et al. is being cited here for the proposition that it teaches that "distribution system includes nodes having databases with indicate their ancestor and descendants (see abstract). O'Neal teaches determining whether the neighboring node is an ancestor node based on a stored address of the neighboring node (page 5 paragraph [0073]). However, O'Neal does not overcome the deficiency of Ogier and Meier et al. to reject claim 23. Therefore, claim 23 is patentably distinguishable over Ogier, Meier et al., and O'Neal et al.

Since claim 24 depends from claim 23, it incorporates all the terms and limitations of claim 23 in addition to other limitations, which together further patentably distinguish this claim over the cited references. Therefore, Applicant requests
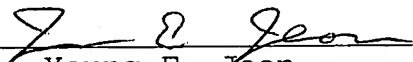
that the rejection of claim 24 be withdrawn and that this claim be allowed.

VI.   Concluding Remarks

In view of the foregoing amendments and remarks, Applicant respectfully submits that the application with claims 1-24 is in a condition for allowance, and earnestly solicits an early issuance of a Notice of Allowance. If there are any remaining issues that can be addressed over the telephone, the Examiner is cordially invited to call the Applicant's attorney at the number listed below.

Respectfully submitted,
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